

Commonwealth of Kentucky
Division for Air Quality
REVISED PERMIT STATEMENT OF BASIS

TITLE V (DRAFT PERMIT) NO. V-05-018
KENTUCKY UTILITIES COMPANY/TYRONE GENERATING STATION
VERSAILLES, KY
APRIL 5, 2007
MASSOUD KAYVANJAH, REVIEWER
PLANT I.D. # 21-239-00001
AGENCY INTEREST # 4244, ACTIVITY # APE20040001

SOURCE DESCRIPTION:

A Title V Permit renewal application for the Kentucky Utilities Company/Tyrone Generating Station (KU) was received on June 1, 2004, and supplemental documents with revised emissions calculations, including the nitrogen oxides (NO_x) Budget Permit application were received on November 10, 2004 and on September 20, 2005 respectively. This Title V permit will include a renewal of the Phase II Acid Rain Permit and the NO_x Budget Permit. The facility produces electricity from three generators activated by turbines powered by steam generated from four diesel fuel boilers rated at 464 MMBtu/hr each (Emission Units 01–04) installed in 1947 and 1948, and a coal fired boiler rated at 976 MMBtu/hr (Emission Unit 05) installed 1953. Emission Units 01-04 have no emissions control devices. Emission Unit 05 is equipped with an electrostatic precipitator to control particulates emissions, and a Low NO_x Burner system to control NO_x emissions was installed in November 2000. The facility also operates a 7 MMBtu/hr Fuel Oil-Fired Boiler (Emission Unit 07) installed in 1963.

Coal handling for Boiler Unit 05 is operated through Emission Unit 06 that includes the receiving hopper; the primary crusher; (3) conveyor transfer points; and a stockpile. These emission points were constructed prior to 1947 and were in operation in 1947.

Significant emission units.

E. Unit 01	Fuel Oil-Fired Indirect Heat Exchanger, 463.7 MMBtu/hr
E. Unit 02	Fuel Oil-Fired Indirect Heat Exchanger, 463.7 MMBtu/hr
E. Unit 03	Fuel Oil-Fired Indirect Heat Exchanger, 463.7 MMBtu/hr
E. Unit 04	Fuel Oil-Fired Indirect Heat Exchanger, 463.7 MMBtu/hr
E. Unit 05	Coal-Fired Indirect Heat Exchanger, 976 MMBtu/hr
E. Unit 06	Coal Conveying and Handling
E. Unit 07	Fuel Oil-Fired Indirect Heat Exchanger, 7 MMBtu/hr

REGULATION APPLICABILITY:

Emission Units 01-04 Four fuel oil #2 fired boilers, rated 463.7 MMBtu/hr each

Emission Unit 01 was installed in 1947. Emission Units 02, 03, and 04 were installed in 1948. There is no air emission control equipment on these units.

401 KAR 61:015, Existing indirect heat exchangers, applicable to an emission unit with a capacity of more than 250 MMBtu/hr and commenced before August 17, 1971;

Regulation No. 7, Prevention and control of emission of particulate matter from combustion of fuel in indirect heat exchangers.

40 CFR, Part 64, Compliance Assurance Monitoring (CAM) for Particulate Matter (PM).

The units have no SO₂ Phase II allowance allocations set by 40 CFR Part 73. Pursuant to permit #O-73-161(Amended), issued on May 10, 1983, these units have a limit of 1.2 lbs of SO₂ per MMBtu for liquid fuel. Compliance with the sulfur dioxide allowable standard is based on AP-42 emission factors, the percent by weight of sulfur in the fuel oil based on certification (analysis, data, or MSDS, contract specifications) from the fuel supplier, and heating value of fuel.

Pursuant to 401 KAR 61:015, Section 4(4), and Regulation No. 7, particulate matter emissions shall not exceed 0.22 lb/MMBtu based upon a three-hour average. Compliance with the allowable particulate standard may be demonstrated by calculating particulate emissions using fuel oil usage rates, fuel analysis at least once per week, and emission factor information based on AP-42 emission factors. Vendor certification may be used to satisfy the fuel analysis.

Pursuant to 401 KAR 61:015 Section 4(4) and Regulation No. 7, the units shall have visible emissions ≤ 40 % opacity, based on a six-minute-average, except that a maximum of sixty (60) percent opacity is allowed for not more than six minutes in any sixty minutes during building a new fire, cleaning the firebox, or blowing soot. For compliance with the opacity limit, when the unit is in operation, the permittee shall make a qualitative observation once per daylight shift. If visible emissions are seen, the permittee shall determine the opacity by Reference Method 9.

401 KAR 51:160, NO_x requirements for large utility and industrial boilers, and 40 CFR Part 96, NO_x Budget Trading Program for State Implementation Plans, apply to this unit. The NO_x Budget Permit application for this unit was submitted to the Division, and received on November 10, 2004. Requirements contained in that application were incorporated into and made part of the NO_x Budget Permit. Pursuant to 401 KAR 52:020, Section 3, the source shall operate in compliance with those requirements.

Pursuant to 40 CFR 76.6(a)(2), this unit is not subject to a NO_x limitation since the Maximum Continuous Steam Flow at 100% load is less than 1060 thousands of lb/hour. Pursuant to 40 CFR 96.4(a), the units are NO_x Budget units, and hence are required to comply with 40 CFR Part 75, Subpart H, which requires continuous emission monitoring of NO_x. However, since there is no

NO_x limitation for this unit, 40 CFR 64, Compliance Assurance Monitoring (CAM), does not apply to NO_x for this unit.

Pursuant 401 KAR 61:015, Section 6, the permittee shall monitor and record the following:

- 1) sulfur content of liquid fuels, as burned, based on certification from the fuel supplier;
- 2) the rate of each fuel burned;
- 3) the heating value and ash content of fuel;
- 4) the average electrical output; and
- 5) the minimum and maximum hourly generation rate.

Emission Unit 05 Coal-Fired boiler, rated 976 MMBtu/hr

This unit was installed in July 21, 1953, and burns coal as the primary fuel and may burn #2 fuel oil for startups and flame stabilization. This unit is equipped with electrostatic precipitator (ESP) with 99% efficiency controlling the emissions of particulate matter. In November 2000, a Low NO_x Burner (LNB) was installed for the boiler.

401 KAR 61:015, existing indirect heat exchangers, applicable to an emission unit with a capacity of more than 250 MMBtu/hr and commenced before August 17, 1971;

Regulation No. 7, prevention and control of emissions of particulate matter, applicable to indirect heat exchangers for combustion of fuel.

Pursuant to 401 KAR 61:015, Section 4(4), and Regulation No. 7, emissions shall not exceed 40 percent opacity based on a six-minute average except that a maximum of 60 percent opacity is allowed for a period or aggregate of periods not more than six minutes in any sixty minutes during building a new fire, cleaning the firebox, or blowing soot.

Pursuant to 401 KAR 61:015, Section 4(4), and Regulation No. 7, particulate emissions shall not exceed 0.22 lb/MMBtu based on a three-hour average. As there is an emission limitation and a control device for particulate matter, 40 CFR Part 64 applies to particulates. Per KU's CAM plan filed on June 1, 2004, KU will use opacity as an indicator of the proper operation of the ESP in lieu of a PM CEMS. KU will conduct tests to determine the relationship between opacity levels and particulate matter.

Pursuant to 401 KAR 61:015, Section 5(1), sulfur dioxide emissions from solid fuel shall not exceed 1.8 lbs/MMBtu based on a twenty-four-hour average. However, pursuant to Kentucky's Federal SIP, 40 CFR 52.928 Control Strategy: the revised SO₂ emission limit for large coal-fired boilers in Bell, Clark, and Woodford Counties, submitted on June 29, 1979, was disapproved.. The allowable limit approved by EPA on May 10, 1976 (41 FR 19105), remains the limit applicable to these sources. [49 FR 11091, Mar. 23, 1984]401 KAR 52:060, Acid rain permits, applies to Emission Units 05 for the prevention, abatement, and control of air pollution and incorporates by reference the federal acid rain provisions as codified in 40 CFR Parts 72 to 78. The unit does have a SO₂ allowance (Table 2, 3, or 4, of 40 CFR Part 73) for each year from 2006 to year 2009 set to be 1713.

Thereafter, the source has an allowance of 675. In addition, the number of allowances actually held by an affected source in a unit may differ from the number allocated by the U.S. EPA. Neither of

the aforementioned conditions necessitates a revision to the unit SO₂ allowance allocation identified in this permit. Pursuant to 401 KAR 61:005, Section 3 and 40 CFR Part 75, a continuous emission monitoring system (CEMS) of sulfur dioxide is required

Pursuant to 401 KAR 51:160, NO_x Requirements for large utility and industrial boilers incorporating by reference 40 CFR 96. The Division on November 10, 2004 received the NO_x Budget Permit Application for this unit. Requirements contained in that application were incorporated into and made part of the NO_x Budget Permit. Pursuant to 401 KAR 52:020, Section 3, the source shall operate in compliance with those requirements. Under the NO_x compliance plan, annual average NO_x emission rate for each year, determined in accordance with 40 CFR Part 75, shall not exceed the applicable emission limitation, under 40 CFR 76.5(a)(2), of 0.46 lb/MMBtu for dry bottom wall-fired boilers.

Pursuant to 40 CFR 52.928, Sulfur Oxides Control Strategy, the revised SO₂ emission limit for large coal-fired boilers in Woodford County, submitted on June 29, 1979 was disapproved. The limit approved by EPA on May 10, 1976 (41 FR 19105) remains the limit applicable to the source.

E. Unit 06 Coal Conveying and Handling, 240 tons/hr

401 KAR 63:010, Fugitive Emissions is applicable to each affected facility which emits or may emit fugitive emissions, and is not elsewhere subject to an opacity standard within the administrative regulations of the Division for Air Quality.

Pursuant to 401 KAR 63:010, Section 3, reasonable precautions shall be taken to prevent visible fugitive dust emissions beyond the property line from becoming airborne. Such reasonable precautions shall include, when applicable, but not be limited to the following:

1. Application and maintenance of asphalt, application of oil, water, or suitable chemicals on roads, material stockpiles, and other surfaces which can create airborne dusts;
2. Installation and use of hoods, fans, and filters for collection of dust emissions, or the use of water sprays or other measures to suppress the dust emissions during handling;

The permittee shall monitor the amount of coal, limestone, flyash and sludge received and/or processed through each piece of conveying or handling equipment, including stockpiles, on a weekly basis. Visible emissions from each piece of equipment or operation described for this item or group shall be monitored daily during daylight hours to determine whether conditions appear to be normal or abnormal. If the emissions appear to be abnormal, the permittee must then comply with the deviation reporting. The permittee shall maintain records of the amount of coal, limestone, flyash and sludge received and/or processed through each piece of conveying or handling equipment, including stockpiles, on a weekly basis.

E. Unit 07 Fuel Oil-Fired Indirect Heat Exchanger, rated 7 MMBtu/hr-Installed 1963

401 KAR 61:015, Existing indirect heat exchangers, applicable to an emissions unit with a capacity of 250 MMBtu/hr or less, and commenced before April 9, 1972.

Pursuant to 401 KAR 61:015, Section 4 (4) and Regulation No. 7, the unit shall have emissions of particulate matter ≤ 0.22 lb/MMBtu of heat input, based on three hour average. Pursuant to 401 KAR 61:015, Section 5(1), sulfur dioxide emissions from burning fuel shall not exceed 0.8 lb/MMBtu, based on a twenty-four hour average.

Pursuant to 401 KAR 61:015 Section 4(4) and Regulation No. 7, the units shall have visible emissions ≤ 40 % opacity, based on a six-minute-average, except that a maximum of sixty (60) percent opacity is allowed for not more than six minutes in any sixty minutes during building a new fire, cleaning the fire-box, or blowing soot. For compliance with the opacity limit, when the unit is in operation, the permittee shall read the opacity of emissions from each stack using Reference Method 9 once per daylight shift.

Pursuant to 61:015, Section 6, the permittee shall monitor and record the following: 1) sulfur content of liquid fuels as burned, based on certification (analysis, data, MSDS, or contract specifications) from the fuel supplier; 2) the rate of fuel burned; 3) the heating value and ash content of fuels.

OPERATIONAL FLEXIBILITY: N/A

EMISSION AND OPERATING CAPS DESCRIPTION: N/A

CREDIBLE EVIDENCE:

This permit contains provisions which require that specific test methods, monitoring or recordkeeping be used as a demonstration of compliance with permit limits. On February 24, 1997, the U.S. EPA promulgated revisions to the following federal regulations: 40 CFR Part 51, Sec. 51.212; 40 CFR Part 52, Sec. 52.12; 40 CFR Part 52, Sec. 52.30; 40 CFR Part 60, Sec. 60.11 and 40 CFR Part 61, Sec. 61.12, that allow the use of credible evidence to establish compliance with applicable requirements. At the issuance of this permit, Kentucky has only adopted the provisions of 40 CFR Part 60, Sec. 60.11 and 40 CFR Part 61, Sec. 61.12 into its air quality regulations.

PAST PERMIT SUMMARY:

Permit type	Log #	Issuance Date	Summary of Action
O-73-161		1973	Initial Operating permit
O-73-161 Amended		May 19, 1983	Amended
V-97-002	E902	Dec. 1, 1999	Initial Title V permit
A-98-015	50224	Final 3/18/99	Phase II Acid Rain permit with SO ₂ allowance allocation and NO _x emission standard